



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : H01M 10/08, 4/36		A1	(11) International Publication Number: WO 97/06573 (43) International Publication Date: 20 February 1997 (20.02.97)
(21) International Application Number: PCT/US96/11740 (22) International Filing Date: 15 July 1996 (15.07.96)		(81) Designated States: AU, CA, JP, KR, MX, SG, VN, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).	
(30) Priority Data: 08/510,984 3 August 1995 (03.08.95) US		Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	
(71) Applicant: BELL COMMUNICATIONS RESEARCH, INC. [US/US]; 445 South Street, Morristown, NJ 07960-6438 (US).			
(72) Inventors: GOZDZ, Antoni, S.; 46 Danbury Road, Tinton Falls, NJ 07754 (US). SCHMUTZ, Caroline, N.; Bellcore, 445 South Street, 1G112R, Morristown, NJ 07960 (US). WARREN, Paul, C.; P.O. Box 212, Far Hills, NJ 07931 (US).			
(74) Agents: WHITE, Lionel, N. et al.; International Coordinator, Room 1G112R, 445 South Street, Morristown, NJ 07960-6438 (US).			
(54) Title: HYBRID LITHIUM-ION BATTERY POLYMER MATRIX COMPOSITIONS			
<p>A hybrid polymeric matrix composition (15) for a lithium-ion rechargeable battery (10) comprises a copolymer of vinylidene fluoride with about 8 to 20 % by weight chlorotrifluoro-ethylene.</p>			

HYBRID LITHIUM-ION BATTERY POLYMER MATRIX COMPOSITIONS

5

RELATED APPLICATIONS

This application is a continuation-in-part of U.S. Patent Application S.N. .08/160,018, filed 30 November 1993, now U.S. Patent 5,460,904, issued 24 October 1995, which was a continuation-in-part of U.S. Patent Application S.N. 08/110,262, filed 23 August 1993, now U.S. Patent 5,418,091, issued 23 May 1995. The prior applications, which are assigned to the assignee of this application, are incorporated herein by reference in their entirety.

20

BACKGROUND OF THE INVENTION

The present invention relates to electrolytic cells comprising polymeric film composition electrodes and separator membranes and to a manner of using such cells to provide highly efficient and economical batteries. In particular, the invention relates to unitary rechargeable lithium battery cells comprising an intermediate separator element containing an electrolyte solution through which lithium ions from a source electrode material move between cell electrodes during the charge/discharge cycles of the cell.

30

The invention is particularly useful for making such cells in which the ion source electrode is a material, such as a